

Closely resembling the major worker in sculpture, pilosity and color and in the form of the thorax, petiole and gaster. Head much smaller, more elongate and more rounded behind the eyes, which are rather large and convex. Mandibles less convex and with more pointed tips.

Described from one minor and five major workers.

This ant is here somewhat doubtfully attached to *C. reticulatus* Roger which is represented by a number of described subspecies in the Indomalayan and Australian regions. I have, however, been unable to refer it to any of the latter, of which I have seen specimens or descriptions. It is smaller and more opaque than the subsp. *yerburyi* Forel of India and *mackayensis* Forel of Queensland, the head is differently colored and the pale margins of the gastric segments are much broader. It is more closely allied to the subsp. *bedoti* Emery, but Emery does not mention the broad gastric bands and the epinotum of his form is described and figured as having a distinct sellate impression at the base, the petiole is thicker and the erect hairs on the petiole and epinotum are much less numerous. *C. fullawayi* also resembles the subsp. *motschulskii* of Ceylon, but this form, to judge from Emery's very brief description, is more heavily sculptured and more opaque. *C. ominusus* Forel of Ceylon and *C. weismanni* Forel of the Bismarck Archipelago seem also to be closely allied but distinct species.

CONTRIBUTION TO AN ANNOTATED LIST OF LONG ISLAND INSECTS.

By CHRIS. E. OLSEN,

MASPETH, L. I., N. Y.

Order HEMIPTERA.

Suborder Heteroptera.

Family PENTATOMIDÆ.

Subfamily SCUTELLERINÆ.

1. *Tetyra bipunctata* Fab.

Bayshore, VII (Ol.), Pinelawn, VI [(Wh.) nymph], Promised Land (Ds. and Eng.), in the last grove of Pines on the Island (Ds.). Reported from Maryland, Washington, D. C., Texas, Mexico and L.

California (V. D.). In New Jersey Lakehurst, Da Costa and Browns Mills (N. J. R.).—Sometimes found on young shoots of old pines, but is especially fond of young trees. In cold weather often secretes itself among the dead needles that accumulate on the upperside of the horizontal branches of the pitch pine; hibernates as adult [(Ds.) N. J. R.].¹

2. *Stethaulax marmoratus* Say.

Rockaway Beach, V. IX, 1911 (Ds.), Kissena Park Flushing, X, 8 [(Ol.) nymph]. Reported from Georgia, N. Jersey, Maryland, N. Carolina and Texas (V. D.), Atlantic coast of the United States and California (Kld.). On cedar.

3. *Eurygaster alternata* Say.

Amagansett, VIII, 10 (Sf.).—Probably the most abundant and universally distributed Scutellerid found in North America; common throughout the northern States and Canada and perhaps equally abundant in the Rocky Mountain region south to New Mexico and west to California. Shows a preference for swampy spots (V. D.). Habits Carices (G. K.). In edges of marshy meadows; often common (N. J. R.).

Subfamily GRAPHOSOMINÆ.

4. *Amaurochrous cinctipes* Say.

Canarsie, IX (Ol.), Rockaway Beach, IV (Eng.) and V (Ds.), Flatbush, XI (Eng.), East New York (VI, Ds.).—Reported from Montreal and N. Jersey (V. D.).

¹The following is a key to the abbreviations of the authorities for the records cited in this paper:

- Banks. Nathan, Assistant in Div. of Ent., U. S. Dept. of Agric.
 Bno. Bueno, J. R. de la Torre, White Plains, N. Y. Hemipterist.
 Brb. Barber, H. G., Roselle Park, N. J. Hemipterist.
 Bt. Beutenmüller, William, Am. Mus. of Nat. Hist., N. Y. City.
 Bth. Bather, Wm. T., Brooklyn. General collector.
 Dow. Robert P., Brooklyn. Collector, chiefly Coleoptera.
 Ds. Davis, W. T., Staten Is. General collector.
 Eng. Engelhardt, G. P., Children's Museum, Brooklyn.
 Ol. Olsen, Chris. E., Maspeth, L. I. Hemipterist.
 Pkt. Plunkett, C. R., Flushing, L. I. Hemipterist.
 Shm. Shoemaker, Ernest, Brooklyn. Collector of Lepidoptera and Coleoptera.
 Sf. Schaeffer, Chas., Brooklyn. Coleopterist.
 Stt. Schott, F. M., Brooklyn. General collector.
 Wh. Wheat, Silas, Brooklyn. General collector.
 Zab. Zabriskie, Rev. J. L., Brooklyn. General collector.

5. Amaurochrous dubius Pal. Beauv.

Canarsie, IV (Dow). Coney Island (Stt.), Cooks Island, XII (Stt.), Rockaway Beach, V (Ols.).—Reported from Fortress Monroe, Va., Texas (V. D.), Cuba, Hayti (G. K.), Chester and Arlington, N. J. (N. J. R.).

Subfamily CYDNINÆ.

6. Cydnus obliquus Uhl.

Aqueduct, IX (Ds.).—Reported from Jamesbury, N. J., VII [Ds. (N. J. R.)], California, Utah, Texas and New Mexico (V. D.).

7. Pangæus bilineatus Say.

Flatbush, VI, II, 1894 (Zab.).—Dr. Uhler records this from most of the eastern and southern states. Professor Osborn from Iowa and Oregon (V. D.).

8. Amnestus spinifrons Say.

Canarsie, IX (Ol.), Queens Co., VI (Eng.), Aqueduct, X (Brb.), Rockaway Beach, VI (Ol.), Flushing (Dow).—Reported from United States as far west as Colorado and Texas (V. D.).

9. Amnestus pusillus Uhl.

Maspeth, V (Ol.), Rockaway B., V (Ol.).—Common in eastern United States. Reported from Trinidad and Lower California (V. D.).

Subfamily PENTATONINÆ.

10. Brochymena arborea Say.

Queens, VIII (Ol. and Eng.), Wyandauch, IX (Stt.), Balwin, VIII (Ds.), Huntington, IX (Stt.), Pinelawn, VIII (Ds.) nymph, Calverton, IX (Ds.), Yaphank, X Ds., Flatbush, XI, 17, 1894. (Zab.), Springs, IX (Ds.).—United States and Canada. Seems to be most abundant in regions covered with forests of deciduous trees (V. D.). Mexico. Parasitized by *Trissolcus brochymenæ* Hym. (G. K.).—Members of this genus are commonly called "Tree bugs." Professor J. B. Smith mentions that *B. arborea* is often present in numbers sufficient to attract attention yet not conspicuous because of its grayish brown color harmonizing well with the bark of the trees on which it lives (N. J. R.).

11. Brochymena quadripustulata Fabr.

Port Washington, IX (Ol.), Queens, VIII (Ol.) and VII (Eng.), Wyandanch, V (Stt.), Coney Is., VII (Zab.), Parkville (Bt.). Rock-

away Beach (Bth.).—This is by far our most abundant species of *Brochymena* throughout the eastern United States and Canada. It ranges west to Arizona, Utah and California (V. D.). Feeds on *Notolophus leucostigma* (lp.) (G. K.). Brought to maturity from nymphal stage on common cultivated bean (T. B. 3).

12. *Peribalus limbolarius* Stål.

Common all over the Island. Very abundant throughout United States and Canada. Mr. Van Duzee points out that specimens from the east are mostly large and dark colored, while the ones from the arid regions are smaller and pale (V. D.). Mexico (G. K.).—Foodplants *Solidago* (G. K.), common on shepherd's purse (N. J. R.).

13. *Trichopepla semivittata* Say.

Throughout the Island common.—Widely distributed and locally common. Northeastern United States as far west as Colorado.—Montreal (V. D.), Mexico (G. K.). Mr. Van Duzee notes: "I once found this insect in large numbers on carrot blossoms in a waste field near Buffalo, N. Y., as late as November 3 in all stages of development" (V. D.). Foodplant *Daucus carota* Kld.

14. *Chlorochroa saucia* Say.

Reported from along the coast of the Island on both north and south shore, and is apparently confined to these regions.—Reported from localities adjacent to the Atlantic seacoast (V. D.).

15. *Chlorochroa senilis* Say.

Hempstead, IX (Ol.) (Bth.), Brooklyn (Stt.), Pinelawn, IV (Eng.), Queen, III (Eng.), Rockaway B., V-VI (Ol.), VI (Ds.), VI (Bno.), Aqueduct, IX (Ds.), Amityville, VIII (Brb.), *Coney Is.*, IX, 1891 (Zab.).—Common along the coast of Long Island, Staten Island and New Jersey, southwards at least to Virginia (V. D.), [(West India ?) G. K.]. I have a specimen from Baltimore, Md., in my collection (Ol.).

16. *Chlorochroa persimilis* Horwath.

Bayshore, VII (Ol.), Promised Land, IX (Ds.), Amagansett, IX (Eng.), Bayville Beach (Banks) (N. B.). Abundant in the eastern United States north of New Jersey and in eastern Canada (V. D.). This species has been confused with *C. juniperina* Linn., which does not occur on this continent (T. B. 2).

17. Mormidea lugens Fab.

Throughout the Island, IV–XI, common. Common everywhere throughout the eastern United States and Canada and somewhat less abundant in the west (V. D.), Mexico and Cuba (G. K.). Foodplant: *Verbascum* (G. K.). Hibernates as adult (Ol.), Bermuda Is. (V. D. No. 2). Taken on *Ceanothus* (N. B. 2).

18. Solubea pugnax Fab.

Cold Spring Harbor, VII (Brb.), Long Island (Bno.), Rockaway B., V (Bs.). This is a southern species which reaches its northern limits from southern New York westward to Ohio and Iowa (V. D.). I possess a specimen from Langdon, Mo. Reported from Jamaica, Cuba, Mexico, Guatemala, Colombia and Brazil (G. K.). Foodplants: *Zea mays*, *Panicum* *Setaria*, wheat; feeds on larvæ of *Alctia* (Cys.) (G. K.).

19. Euschistus fissilis Uhl.

Throughout the Island, III–IX, common. Van Duzee credits this species with being the most abundant and widely distributed of our North American Pentatomidæ. It is found from Quebec to Vancouver Is. and southwards to Florida and Texas (V. D.) Found on *Zea mays* and wheat; feeds on *Alctia* (Lep.). Parasitized by *Trisolcus euschistus*, Hym. (G. K.).

20. Euschistus politus Uhler.

Throughout the pine region and on Rockaway Beach in washup; locally common; V, IX.—Reported from Ohio, Massachusetts, Rhode Is., Maryland, District C., Mt. Washington, N. Jersey (V. D.). I have found it common in the pine woods of the Island by beating the scrub oak.

21. Euschistus tristigmus Say.

Throughout the Island; common. Common and widely distributed from northern Canada to southern Mexico (V. D.), Guatemala (G. K.). Foodplants: Potato, cotton, *Iris versicolor* (G. K.). Bred from egg to imago on fruits of *Sambucus canadensis* Linn. (Am. Elder), *Verbascum blattaria* (moth mullein). Parasitized by *Trisolcus euschistus* Hym. Preyed on by *Dascillus tergissa* (Dipt.) and *Podisus maculiventris* (Hem.). Hibernates as adult (G. K.).

22. *Euschistus varrolarius* Pal. Beauv.

Common throughout the Island, IV-X. Fifty specimens were collected on Rockaway Beach washup, May 1, 1910 (Ol.). Inhabits almost the whole of United States and Canada; is especially abundant in the northern States (V. D.). Foodplants: *Asparagus*, *Carduus*, *Thermopsis*, *Zea mays*, broomcorn, oats, rye, wheat, red clover, tomatoes, raspberries, mullein, peaches, tobacco, grasses, thistle; said to feed on Lepidopterous larvæ as well as sap of plants. Preys on *Pulvinaria innumerabilis* (Hem.) (G. K.). Bred from eggs to imago on *Lepidium virginicum* Linn. (wild pepper grass) and *Onagra biennis* (evening primrose) (C. O. ms.).

23. *Euschistus ictericus* Linn.

Rockaway Beach, IX (Ol.), Maspeth, X (Ol.), Promised Land, IX (Ds.), Flushing (Pkt.), Yaphauk, V (Brb.).—Found in the northern United States and Canada, on sedges in swampy places or along borders of streams or other bodies of water (V. D.), Elizabeth City, N. Carolina (T. B. and E.) (unusual southern record); *Caricces* in wet places; *Iris versicolor* (G. K.).

24. *Cænus delius* Say.

Wyandanch, VI and IX (Stt.), Rockaway B., VII (Bt.), Queens Co., VIII (Eng.), Half Way Hollow Hills, VII (Ds.). Amagansett, IX (Ds. and Eng.) Montauk, IX (Ds.), Flushing, VIII (Pkt.) and VII (Ol.), Cold Sp. Harbor, VIII (Brb.), Flatbush, VI, 1893 (Zab.).—Widely distributed and common in United States and Canada but apparently precinctive. In north it occurs from Quebec to Vancouver Isl. Its southern range includes Florida and Texas (V. D.). Hibernates as adult under stones in fields (N. J. R.). I have kept mature insects of this species in captivity for nearly two months (from VII, 2), feeding on moth mullein, *Verbascum blattaria* (C. O. ms.).

25. *Hymenarcys nervosa* Say.

Rockaway B., VII (Bt.), V (Ol.), V (Ds.), Yaphauk, IX (Ds.), Cold Sp. Harbor, VII (Brb.), Flatbush (Bno.), and X, 1891 (Zab.).—Southern United States. Provancher records it from Quebec and Dr. Felt from Albany (V. D.).—Foodplant: Cotton (G. K.).

26. *Neottiglossa undata* Say.

Yaphauk, X (Ds.).—Common in northeastern United States; its southern range probably New Jersey. Illinois, Nebraska and Colorado (V. D.).

27. Cosmopepla carnifex Fab.

Maspeth, VI-VIII (Ol.), Queens, VIII (Ol.), Rockaway B., VII (Bt.), Flatbush, IV (Eng.) and IX (Zab.), Huntington (Stt.), Cold Sp. Harbor, VIII (Brb.).—Abundant in eastern United States and Canada; its western limits seem to be Texas, Colorado and Washington (State), but it is much more at home east of the Rocky Mountains (V. D.). Foodplants: *Scrophularia nodosa*, *Ranunculus*, currants, blackberry, mints, mullein, potato, raspberry, thistle (G. K.). Bred from egg to imago on *Vcrbascum blattaria* (C. O.). A male has been observed to prey upon the eggs deposited by its mate, completely draining their contents (C. O. ms.).

28. Meneclis insertus Say.

Rockaway Beach, V (Ds.).—Widely distributed in United States but apparently nowhere abundant (V. D.). Taken in numbers from small hickory trees at Lewiston, N. Y. (V. D.). Predaceous on larvæ of *Porthetria dispar* (Lep.) (G. K.).

29. Thyanta custator Fab.

Rockaway B., V-VIII (Ol.), Flatbush, IX (Eng.), Colverton, IX (Eng.), Yaphank, V (Ol. and Sf.).—A variable and widely distributed North American species, which becomes more abundant towards south and west. It is rare north of New York City (V. D.); common south of the red shale of New Jersey throughout the season (N. J. R.). Foodplants: *Asparagus*, *Zea mays*, wheat, grasses. Parasitized by *Trissolcus thyantæ* and *Eupelmus hirtus* (Hym.) (G. K.) and *Teleonomus ashmeadi* (A. W. M.).

30. Thyanta calceata Say.

Cold Sp. Harbor, VII (Brb.).—Occurs in New Jersey, N. Carolina, Connecticut, Massachusetts (H. G. B.).

31. Murgantia histrionica Hahn.

Jamaica. Reported several times on cabbage [N. Banks (N. B.)]. This common cabbage pest of the Southern States has spread northwards to the vicinity of New York City (V. D.). United States; Costa Rica; Guatemala; Mexico (G. K.). Has been taken as far north as Morris Co., N. J. (N. J. R.). Foodplants: All cultivated Cruciferæ; Cucurbitaceæ, *Asparagus*; *Cleone serrulata*; grapes; *Zea mays* (Kld.). Parasitized by *Encyrtus johnsoni* and *Trissolcus murgantiae* [(Hym.) G. K.] and *Trissolcus podisa* Hym. (A. W. M.). Preyed on by *Thecognis phyllopus* (Hem.) [Lintner (G. K.)].

32. *Nezara pennsylvanica* De Geer.

Baldwin, VII (Heinreich), Calverton, IX (Ds.), Yaphank, V (Ds.) and VII (Ol.).—Seems to be rare and local from New Jersey, New York, Ohio, Iowa, Massachusetts, Illinois and Montreal (V. D.). Taken on *Ccanothus* (N. B. 2).

33. *Nezara hiliaris* Say.

Throughout the Island; common (III-X).—Common throughout the northeastern United States and Canada, its southern range extending through Southern States and West India to Brazil (V. D.). Food-plants: *Citrus aurantium*, *Gossypium*, *Tilia americana*, trumpet creeper, cowpeas, tomatoes. Feeds on *Aletia* (Lep.) (G. K.). Brought to maturity from nymphal stage on common cultivated bean (T. B. No. 3). Taken on *Ccanothus* (N. B. 2).

34. *Banasa calva* Say.

Harbor Hill and Sea Cliff, III-VII [Banks (N. B.)], North Beach, IX (Brb.), Amagansett, IX (Eng.).—Tolerably abundant about Buffalo, N. Y., in Georgia, Montana, Wisconsin (V. D.). Food-plants: *Citrus aurantium* (G. K.), iron-wood trees (V. D.).

35. *Banasa dimidiata* Say.

Brooklyn (Dow), Rockaway B., VI (Ol.), Calverton, IX (Ds.), Yaphank (Sf.), Amagansett, IX (Eng.), North Beach, IX (Brb.), Quaque, VIII (Zab.). A common and widely distributed species; occurs mostly in eastern States and Canada from Quebec to Vancouver Islands (V. D.).

36. *Dendrocoris humeralis* Uhl.

Throughout the pine region of the Island; common, V-IX.—Widely distributed in the United States, beaten in numbers from scrub oak in Colorado (V. D.). Foodplants: *Carya*, *Quercus* (G. K.).

Subfamily ASOPINÆ.

37. *Stiretrus anchorago* Fab.

Roslyn, 1901 [Banks (N. B.)], Rockaway B., VI (Eng.).—It has been recorded from nearly all the southern states as far north as Iowa and Massachusetts; southwardly it extends through Mexico to Panama. Van Duzee mentions four varieties. Feeds on larvæ of *Papilio asterias* Lep., *Leptinotarsa decemlineata*, *Epilachna borealis*

(Glover) (Col.) and *Galeruca* (Col.) [(Uhler) G. K.].—Foodplants: *Asclepias pulchra*; *Rhus glabra* (G. K.). Preys on asparagus slugs (N. J. R.). Taken on *Ceanothus* (N. B. 2).

38. *Perilloides exaptus* Say.

Maspeth, VII (Ol.), Rockaway B., VI (Eng.) and VI (Ds. and Shm.).—This species seems in some of its varieties to extend across the entire continent. Van Duzee mentions four varieties. Kirkaldy gives its distribution as Canada, United States and Lower California.

39. *Perilloides circumcinctus* Stål.

Long Island, 1902 [Banks (N. B.)], Rockaway B., V (Ds.), eastern United States and Canada (V. D.). Feeds on larvæ of *Leptinotarsa deccmlincata* (Col.) (G. K.) and of various other beetles (N. J. R.); also on both larvæ and mature insect of *Trirhabda tomentosa* Col. (Ol.).

40. *Mineus stigipes* H. S.

Maspeth, VII (Ol.), Rockaway B., VI (Eng.), Flatbush, VII (Kate Z. Wells—Zab.), Huntington, VI (Stt.), Flushing, VII (Pkt.) and VIII (Ol.), Cold Sp. Harbor, VIII (Brb.). Reported from New York, New Jersey, Maryland, S. Carolina, Georgia, Texas, New Mexico, Ohio and Washington, D. C.; also included in Baker's list of Hemiptera of Colorado. Taken on *Ceanothus* (N. B. 2).

41. *Apateticus cynicus* Say.

Rockaway B., VII (Ol.) and (Stt.), VIII (Eng.), IX (Bno.) (Bth.) and (Dow), Yaphank, VII (Ds.), Amagansett (Sf.).—Common throughout eastern United States and Canada; Texas (V. D.).—Foodplant: Apple, oak, etc.; feeds on the sap of trees (Glover), on the larvæ of *Aletia* (Lep.) and *Leptinotarsa deccmlincata* (Col.) and of *Nematus ventricosus* (G. K.). Predatory on slugs of all kinds (N. J. R.).

42. *Apateticus bracteatus* Fitch.

Rockaway Beach, VII–VIII (Ol.), IX (Bno.), Fire Island, IX on Creshes (Ds.), Flatbush, IX, 1892 (Zab.).—New York, Idaho, Montreal and Vancouver; a distinctly northern species (V. D.).

43. *Podisus maculiventris* Say.

Common all over the Island, V–X; one example taken at Glendale Swamps as early as January 6 in the act of preying on some insect

(Dow). It is common over a great part of the United States and Canada, but becomes less abundant west of the eastern slopes of the Rocky Mountains (V. D.). Principal food of nymph vegetarian, apple, etc.: larvæ of *Salandria barda* (Hym.), of *Pristiphora glossulariæ* (Hym.), of *Alabama argillacia* and *Heliopsis obsoleta* (Lep.), of *Gallerucella luteola*, *Haltica chalybea* and *Leptinotarsa decemlineata* (Col.), nymphs of *Euschistus tristigmus* (Hem.) (G. K.); *Adalia bipunctata*, *Epitragus arundinis* (Col.); larvæ of *Pieris rapæ*, of *Alypia octomaculata*, of various Noctuids and geometers (Lep.); in captivity highly cannibalistic.—Foodplant: *Ouagra biennis* (Ol.). Parasitized by *Trissolcus podisi* (Hym.) (G. K.) and *Trissolcus thyanthæ* (Hym.) (N. J. R.).

44. *Podisus serieventris* Uhl.

Sea Cliff, V–VIII (Banks), Bayshore, IX (Ol.), Amagansett, IX (Eng.), Rockaway B., IX (Bno).—Vancouver Is., Montana, New Hampshire, Massachusetts (V. D.).—Feeds on larvæ of *Atlacus promethea*, *Clisiocampa americana* and *disstia*, *Hyphantria cunea* Lep., dead imagoes of *Limnites ursula* and *Pyrophila pyramidoides* (Lep.), also *Podisus cynicus* and *Mencles insertus* (Hem.), and all stages of *Porthetria dispar* Lep. (Kirkland). Foodplant: *Quercus rubra* (G. K.).

45. *Podisus modestus*.

Brooklyn (Dow), Rockaway B., VI (Ol.), Yaphank, VII (Ds.), Amagansett, IX (Eng. and Ds.), Flatbush, VII (Stt.), Long Beach, VII (Stt.).—Common throughout the northeastern United States and Canada (V. D.), Mexico and Hispaniola (Kld.). Feeds on larvæ of *Hemileuca maia* (Lep.) and *Nematus crichsonii* (Hym.) and of *Haltica chalybea* (Col.). Foodplant: *Clematis ligusticifolia*, *Solidago* (G. K.). Parasitized by *Telenomus podisi* (Hym.) (G. K.).

46. *Podisus placidus* Uhl.

Throughout the pine region of the Island and Rockaway Beach in washup; common, V–IX.—Recorded from Canada, Massachusetts, New York, Michigan, Colorado and Iowa (V. D.). Foodplant probably scrub oak.

Subfamily ACANTHOSOMINÆ.

47. *Elasmucha lateralis* Say.

Rockaway Beach, VI (Ol.), V (Ds.), Yaphank, VII (Ds.).—

Widely distributed in northern United States and Canada. Distant reports it from Mexico (V. D.).

48. *Elasmostethus cruciatus* Say.

Rockaway Beach, VI (Bno.).—New York, North Carolina, Montreal, Utah and Vancouver Islands (V. D.).

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OBSERVATIONS ON THE LIFE HISTORY OF
ENCHENOPA BINOTATA SAY.

BY IGNAZ MATAUSCH,
ROSELLE, N. J.

(WITH PLATES V AND VI.)

During the past few years I have been engaged in a systematic study of the *Membracidæ* and have prepared a number of enlarged